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Sent: Friday, October 14, 2005 5:12 PM
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Cc: 'Kaitilin Gaffney'; 'Wing, Kate'; 'Gary Strachan'; 'Brenna Langabeer'; 'Dan Robinette'
Subject: MLPAComments: MPA proposals for the central coast

Regarding the California Marine Life Protection Act Initiative Announcement, please find attached an MPA proposal for the area in the vicinity of Ano Nuevo Point in central California. Please feel free to contact me with any questions.

Thank you,
Julie

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Proposal for Año Nuevo Marine Protected Area
Submitted by Julie Thayer
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Summary

The proposed MPA would protect a productivity and biodiversity hotspot in central California. The area between Pigeon Point and El Jarro Point contains multiple habitat types, including an important upwelling plume that provides nutrients for Monterey Bay, results in large amounts of primary and secondary production, and supports important fishes, marine mammals and seabirds further up the food web. Año Nuevo Island (ANI) and the surrounding islets and cliffs provide breeding and haul-out habitat for over 18,000 marine mammals and 9,000 seabirds, including the threatened Steller Sea Lion, endangered Brown Pelican, and species of special concern such as Rhinoceros Auklet, Cassin's Auklet and Ashy Storm-Petrel. California Current endemics Brandt's Cormorant and Western Gull also have large breeding colonies there. Coastal kelp forests, eelgrass beds, rocky reefs, and both hard and soft substrates in this area provide habitat for the threatened Southern Sea Otter and overfished groundfish species (*Sebastes* spp., lingcod), as well as foraging opportunities for other marine mammals, birds such as the endangered Marbled Murrelet, and listed White Sharks. An existing Invertebrate Area Special Closure at Año Nuevo would also be included in this MPA. The Gazos, Waddell and Scott Creek watersheds and estuaries support populations of the endangered Snowy Plover and Coho Salmon, and threatened Steelhead, species that are dependent on both healthy terrestrial and marine habitats.

Additional socio-economic and logistical characteristics make this location desirable as an MPA. The proposed MPA is not adjacent to a major port but is adjacent to existing state parks (Año Nuevo State Reserve, Big Basin State Park). This proposed MPA would also provide opportunities for cooperative state, federal and local management, has research and educational programs in place, and is beneficial to the public as a non-intrusive eco-tourism and limited recreational (surfing, wind-surfing) area.

Description and rationale for boundaries

Although much of reserve design focuses on organisms with small ranges of movement, design of MPAs should also take into account need for protecting species with greater ranges of movement. The proposed MPA Alternative 1 would protect a wedge-shaped area along the coast directly south from Pigeon Point and out to 3 miles west of El Jarro Point, extending towards Año Nuevo and Ascension Submarine Canyons (**Figure 1**). These boundaries would protect large marine mammal and bird rookeries and diverse estuarine, tidal, subtidal, pelagic and benthic habitat, would include the Año Nuevo Invertebrate Area Special Closure, and would encompass the northern portion of the Año Nuevo upwelling plume and larval retention zones leeward of important coastal promontories (Pigeon Point and Point Año Nuevo). This design would also contain a significant amount of prime marine mammal and bird foraging area near an important breeding colony (**Table 1**).

Alternative 2 would encompass the area between boundaries extending due southwest from Franklin Point and from Greyhound Rock, out to 3mi (**Figure 1**). These reduced boundaries would protect less of the above-described targets.

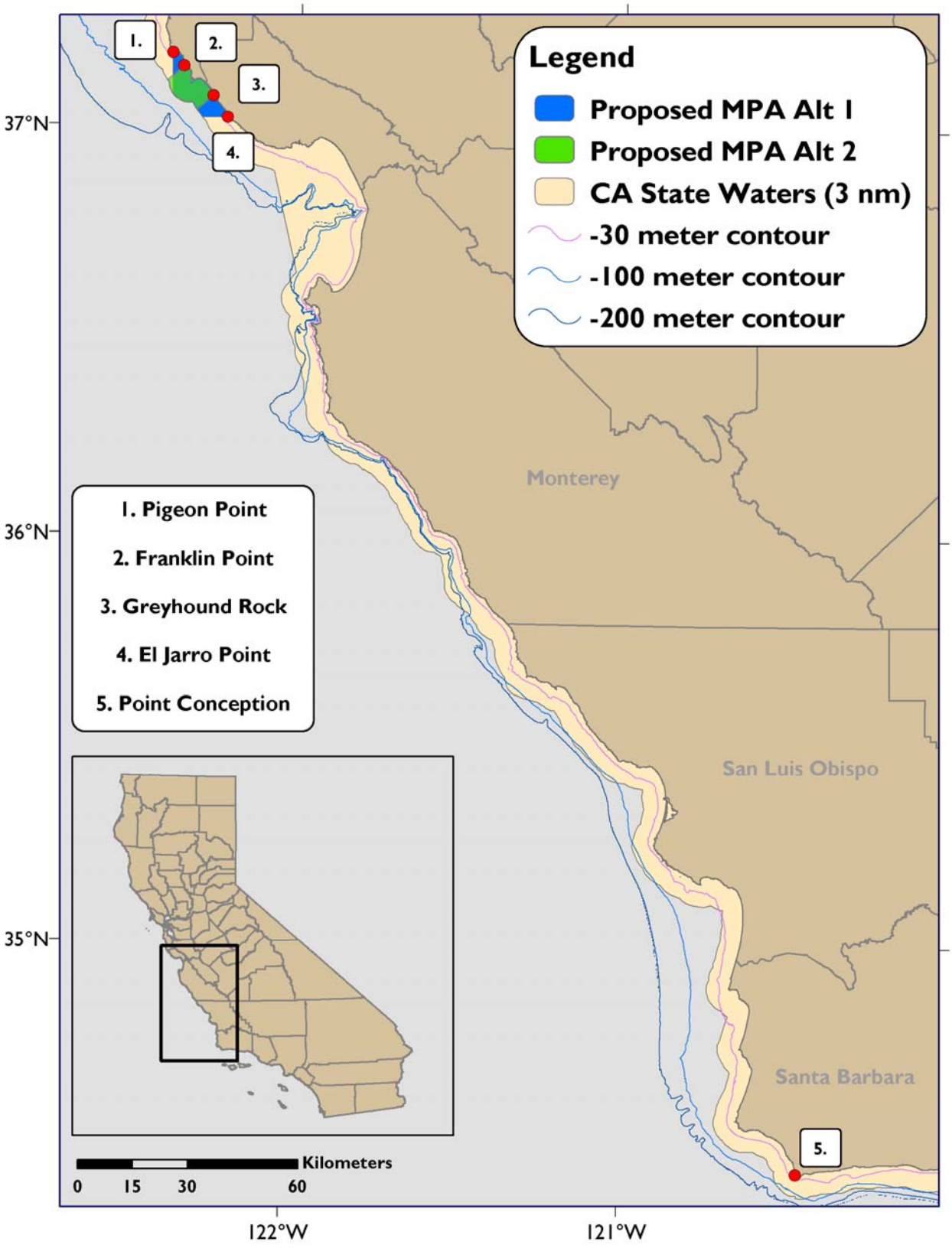
Legend
Proposed MPA Alt 1
Proposed MPA Alt 2
CA State Waters (3 nm)
-30 meter contour
-100 meter contour
-200 meter contour
1. Pigeon Point
2. Franklin Point
3. Greyhound Rock
4. El Jarro Point
5. Point Conception
Monterey
San Luis Obispo
Santa Barbara
Kilometers
0 15 30 60
37°N
36°N
35°N
122°W
121°W

Table 1. Approximate foraging or home ranges of some top predators

Species	Range
Marbled Murrelet (breeding)	1-13km
Cassin's Auklet (breeding)	1-30km
Rhinoceros Auklet (breeding)	1-90km
Brandt's Cormorant (breeding)	1-20km
Pigeon Guillemot (breeding)	1-10km
Stellar Sea Lion (lactating female)	1-35km
California Sea Lion (lactating female)	1-50km
Lingcod	2-20km
California Halibut	1-10km
Olive Rockfish	1–1,500m
Gopher or Black-and-Yellow Rockfish	1-15m

Species and status of species likely to benefit from MPAs

Marine birds:
Brown pelican – Federally endangered
Marbled murrelet – Federally threatened, CA endangered
Snowy plover – Federally threatened
Rhinoceros auklet – CA species special concern
Cassin's auklet – CA species special concern
Ashy storm-petrel – CA species special concern
Brandt's cormorant – CA Current endemic
Western gull – CA Current endemic
Heerman's gull
California Gull
Pigeon guillemot
Pelagic cormorant
Pacific loon
Western & Clark's grebe
Sooty shearwater
Brant goose
Surf scoter
Red phalarope
Black oystercatcher
Ruddy turnstone
Black turnstone
Wandering tattler
Surfbird
Sanderling
Whimbrel

Marine mammals:
Steller sea lion – Federally threatened
Southern sea otter – Federally threatened
California gray whale – formerly Federally endangered
Pacific common dolphin
California sea lion
Harbor seal
Northern elephant seal

Fishes:
Coho salmon – Federally endangered
Steelhead – Federally threatened
Chinook salmon – CA species special concern
Lingcod – Overfished
Rockfish (*Sebastes* spp, including Canary, Boccacio, Widow, Yellowtail, Darkblotched, Blue, Square spot, Black, Halfbanded, Brown, Bank, Copper, Gopher, Black and Yellow, Kelp) – Overfished
White shark
Leopard shark
Spiny dogfish
Northern anchovy
Shiner surfperch
Pacific sandab
Speckled sandab
English sole

Rock sole
Petrale sole
Sand sole
Diamond turbot
California halibut
White croaker
Sculpin (Fam. Cottidae)
Gunnel
Plainfin midshipman

Pelagic invertebrates:
Loligo opalescens
Micro and meso-zooplankton, including:
Euphausiacea (krill - including *Thysanoessa spinifera* & *Euphausia pacifica*)
Decapoda (>11 spp.)
Isopoda
Amphipoda (>14 spp.)
Mysidacea (>6 spp.)
Copepoda (>12 spp.)
Ostracoda
Cirripedia (>3 spp.)
Malacostraca

Algae and nearshore invertebrates:
Acanthinucella spp
Acrosiphonia spp
Ahnfeltiopsis leptophylla
Alia spp
Amphissa versicolor
Analipus japonicus
Anthopleura elegantissima
Anthopleura sola
Balanus glandula
Bangia spp
Blidingia subsalsa
Blue green algae
Bossiella spp
Calliarthron spp
Cancer spp
Chaetomorpha spiralis
Chondracanthus canaliculatus
Chondracanthus spinosus
Chthamalus spp
Cirolana spp
Cladophora columbiana
Cladophora graminea
Corallina spp
Crepidula spp
Cryptopleura/Hymenena spp
Cryptosiphonia woodii
Dodecaceria fewkesi
Egregia menziesii
Encrusting coralline
Endocladia muricata
Epiactis prolifera
Epitonium tinctum
Farlowia/pikea spp
Fucus spp
Fusinus luteopictus
Fastroclonium subarticulatum
Gelidium coulteri
Gelidium coulteri/pusillum
Gelidium spp
Halosaccion glandiforme
Hedophyllum sessile
Hemigrapsus nudus
Hildenbrandia/Peyssonnelia spp
Lacuna spp
Lepidochitona dentiens
Lepidochitona hartwegii
Leptasterias spp
Littorina keenae
Littorina plena/scutulata
Lottia asmi
Lottia austrodigitalis/digitalis
Lottia limatula
Lottia paradigitalis/strigatella
Lottia pelta
Lottia scabra/conus
Mastocarpus jardinii
Mastocarpus papillatus
Mazzaella leptorhynchos
Mazzaella spp
Mazzaella volans
Mopalia spp
Mytilus californianus
Neorhodomela larix
Nucella emarginata
Odonthalia floccosa
Onchidella borealis
Osmundea spectabilis

Pachygrapsus crassipes
Pagurus granosimanus
Pagurus hirsutiusculus
Pagurus samuelis
Pelvetiopsis spp
Petrocelis spp
Phragmatopoma californica
Phyllospadix scouleri (surf grass)
Phyllospadix torreyi (surf grass)
Pisaster ochraceus
Porphyra spp
Prionitis lanceolata
Prionitis lyallii
Pterosiphonia dendroidea
Pugettia producta
Ralfsiaceae
Rhodymenia californica
Sarcodiotheca gaudichaudii
Silvetia compressa
Strongylocentrotus purpuratus
Tegula brunnea
Tegula funebralis
Ulva spp

Background of some listed species

Marbled Murrelet

The entire central California Marbled Murrelet population is generally considered the most endangered. Numbering about 600 individuals, this population is experiencing almost complete reproductive failure due to a variety of reason including prey limitation in some years and nest predation in most if not all years. Radio-telemetry indicates that about 90% of all at-sea foraging locations for the population occur between Soquel Point in the south and Pillar Point in the north. Marbled Murrelets breed in Big Basin State Park and Butano State Park, with Waddell and Pescadero Creek watersheds as primary inland flyways. The vast majority of foraging locations are in Año Nuevo Bay and around Año Nuevo Point. Breeding birds stay close to nesting sites; individuals traveled up to 12.7 (± 9.2km) during the 1998 ENSO (when birds presumably didn't breed and/or had to search farther for food) to only 6.5 (± 5.3km) during the highly productive 1999 La Niña event.

Rhinoceros Auklet

At less than ~2000 birds, there are fewer Rhinoceros Auklets breeding in California than there are endangered Marbled Murrelets. Rhinoceros Auklets occur at only 1 main colony in northern California and 2 colonies in central California. In central California, Rhinoceros Auklets recolonized Southeast Farallon Island in 1972 after an absence of almost a century, while the colony at ANI was newly established in approximately 1982. Due to the difficulties in studying this nocturnal, burrow-nesting seabird, population trends in California are unknown except at ANI. The ANI population has increased overall, reached ~288 individuals in 2003, largely with the aid of habitat protection and enhancement in the form of boardwalks and artificial burrows (nest boxes). However, the population has declined in recent years to an estimated 212 birds. Rhinoceros Auklets are present on ANI from approximately January through September.

Cassin's Auklet

Main nesting populations of Cassin's Auklet in California include only 3 sites, 1 each in northern, central and southern California. Population trends are followed only on Southeast Farallon Island, where the population decreased substantially from about 130,000 birds in the early 1970s to approximately 16,200 at present. However, a small, growing Cassin's Auklet population was

established on Año Nuevo Island in 1995.

Brandt's Cormorant

An endemic to the California Current system, approximately 70% of world's Brandt's Cormorant population breeds in central California. On offshore Farallon Island, the population decreased precipitously from almost 25,000 in the 1970s to less than 5,000 the mid 1980s, but has started increasing in recent years. While such offshore colonies were decreasing, a new colony became established on ANI in 1989, which has increased to almost 4,000 birds. This inshore movement is likely related to prey community composition and distribution. In addition to breeding, Brandt's Cormorants use ANI year round as a roost site. Therefore, nearshore foraging areas and colonies like ANI are increasingly important to this species, and warrant increased protection.

Brown Pelican

This federally endangered species uses Año Nuevo Island and surrounding islets and mainland cliffs as an important roost site. Between 1,000-3,000 Brown Pelican adults and juveniles regularly use this site for resting and preening, and forage in surrounding waters; over 5,000 Brown Pelicans have been documented in some years.

Steller Sea Lion

Abundance. Counts of non-pups at ANI from the 1920s through the 1960s during the breeding season ranged from 1,500 to 2,000. Beginning in the early 1970s, the population started to decline and by 1990 it was reduced to 490 total animals. The population declines may have been exacerbated further by the 1992 El Niño: from 1990-1993 pups and older animals declined at rates of 10% and 31.5%, respectively. In 2000, only 349 adults and juveniles were counted on ANI and South Farallon Islands combined, with the majority of those animals located on ANI.

Movement patterns. Movement patterns vary significantly among sexes and age classes. Sub-adult and adult males are only found on rookeries during the breeding season (late May-early July) and may disperse widely outside of the breeding season in search of optimal foraging conditions. Females and pups are located at the rookeries during the breeding season and may remain there in the winter or move to haulouts near good foraging areas. Females with pups tend to stay within 20nm of the rookery or haul-out, while females without a pup will travel farther from shore in search of food. Post-weaned juveniles have limited diving abilities and tend to remain in shallower waters close to haul-outs and rookeries. Older juveniles may disperse widely and only return to rookeries when they reach reproductive age. There is a high degree of natal site fidelity for this species, though some exchange (<10%) may occur between adjacent rookeries. Recent genetic studies suggest that males have higher dispersal rates and females have high rates of philopatry.

Phenology. Females and pups can be found on ANI during the breeding season (mid-May to mid-July), but vacate the island by early October. Sub-Adult males and juvenile animals can be seen on ANI any time of year, but primarily during the breeding season. Adult males are seen on ANI only during the breeding season.

Salmonids

All coastal streams south of San Francisco have lost their natural runs of coho salmon except Scott and Waddell Creeks in Santa Cruz County. The Scott Creek watershed is inhabited by the southernmost population of coho salmon (*Oncorhynchus kisutch*) and by steelhead (*O. mykiss*), both listed as Threatened under ESA. Estuaries are considered important nursery and protective habitats for juvenile salmon during the critical phase of development when physiological adaptations are preparing them for life in the ocean. Various factors affect estuaries and their use to salmonids. Many estuaries in California are small with large fluctuations of freshwater discharge and are separated from the ocean by sandbar formation during the low flow period of summer and fall. In addition, a variety of environmental conditions exits among the small estuaries, including impact of human activities. These factors can affect the occurrence, abundance, residence time, growth, smoltification, physiological performance, and feeding of juvenile salmonids and thus impact year-class recruitment strength.

Representative and unique habitats in the region

The proposed MPA encompasses large areas of multiple habitat types, including offshore islands and islets, rocky cliffs, estuarine areas, important intertidal zones, rocky reefs and other hard ocean substrates, sandy or soft ocean substrates, kelp forests, and eelgrass beds.

Distribution of oceanic features

Major coastal promontories Pigeon Point, Point Año Nuevo and El Jarro Point are located inshore of two significant submarine canyons extending in from the shelf break, Ascension and Año Nuevo Canyons. The region in between these points and canyons is extremely productive due to coastal and bathymetric upwelling.

The persistent upwelling plume supports and concentrates a diverse array of species from plankton to top predators. At-sea surveys show numerous birds and mammals utilizing this area, as many pelagic species use predictable oceanic features to forage. Bathymetric and shallow-water topography associations of upper trophic-level predators can help delineate sites of elevated trophic transfer.

Participants and their roles

PRBO Conservation Science provided information and coordinated information from other sources listed below. Contact at PRBO is Julie Thayer, seabird & fish researcher, jthayer@prbo.org.

Sources of information

Personal communications with the following researchers/experts/managers:
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Under-protected target habitats

- Waters surrounding marine mammal and bird rookeries along the central California coast
- Persistent upwelling plumes and associated areas of high productivity which are main predator foraging habitat
- Rocky reefs and other hard ocean substrates
- Eelgrass beds

Regional resource problems

- **Overfished groundfish** such as rockfish and lingcod - Declines have been identified in a number of species of rockfishes in California, and while there is some debate over the current status of certain species of rockfishes there are others for which the evidence of serious decline is overwhelming. These declines threaten the health of individual stocks, as well as have an impact on the health of the marine ecosystem as a whole, both as prey for other species and as predators themselves. Both juvenile and adult rockfish comprise a large portion of marine bird and mammal diet in central California, and decreases in some populations and productivity of predators has been shown in the absence of rockfish. Rockfish declines also have significant negative impacts on commercial and sport fisheries.
- **Night-lighting by boats and other marine-based disturbance** to marine bird and mammal rookeries - The potential for disturbance to rookeries, roosts and foraging areas has increased with increased fishing activity and boat traffic. ANI and the surrounding area are important

for breeding Steller Sea Lions and Southern Sea Otters (threatened) and roosting and foraging Brown Pelicans (endangered). Salmon fishing is disturbing during some periods, when large groups of boats accumulate in the area. Direct disturbance issues generated by fishing vessels include being too close to breeding areas during day or night or interference with foraging animals at sea. Bright night-lighting from squid vessels can attract and disorient seabirds or expose nocturnal seabirds to predators, causing colony abandonment, injury, or death. Night lighting by other boats that use Año Nuevo Bay for overnight mooring may also disturb rookeries and cause seabird mortality. Nocturnal Rhinoceros and Cassin's Auklets and Ashy Storm-Petrels may be affected. Effects of squid fishing on marine bird and mammal rookeries in this area were not addressed by the Market Squid Fishery Management Plan.

- **Direct competition of fisheries** with predatory marine fish, bird and mammal populations, including "fishing down the food chain" - In addition to night-lighting discussed above, the squid fishery has ecosystem impacts in terms of availability of squid as an important forage resource to upper trophic level wildlife. Additional issues involve commercial take of other forage species. Present day fisheries target several of the most important prey items for sea lions and seabirds and millions of metric tons of prey have been removed by fisheries in recent decades. Proposals have been put forth for commercially targeting krill. Take of such low trophic-level organisms may negatively affect populations of commercially valuable predatory species such as groundfish and salmon, as well as marine mammal and bird populations.
- **"Bycatch" of marine birds and mammals** - On-board fishery observers found that four Steller Sea Lions were killed by incidental take in fisheries between California and Washington from 1997-2001. Both Steller and California Sea Lions are have been observed on ANI with fishing line or net tangled around their necks. On Southeast Farallon Island between 1976-1998, 27 Steller sea lions were observed entangled in synthetic material and 37% of those were adults entangled in salmon fishing gear. Rhinoceros Auklets, Brandt's Cormorants, and other seabirds have also been found tangled in fishing line on ANI, often resulting in mortality.
- **Oil and other contaminants** - An estimated 1,566 Rhinoceros Auklets were killed or debilitated in the 1986 *Apex Houston* oil spill in central California (Page et al. 1990). More recent spills have also affected Rhinoceros and Cassin's Auklets, including chronic oiling from the sunken *SS Jacob Lukenbach* off the San Mateo County coast. Oiled birds continued to be recovered on ANI in 2005. Other contaminants may bioaccumulate up food chains, increasing mortality and/or reducing breeding success. Organochlorine and trace metal contaminant levels are elevated in central California Steller sea lions (Jarman et al 1996).
- **Acoustic disturbance** (e.g., noise from boats and ships, aircraft, and military and industrial activities) - There is concern about the potential negative impacts of human-induced noise on pinnipeds and cetaceans, such as altering behavior and movement patterns.

Overall level of protection proposed

MPA status

Proposed management measures

- No fishing or invertebrate extraction
- No night-lighting from boats within 1mi of Año Nuevo Island
- Improve enforcement of regulations prohibiting the intentional take (e.g., shooting) of marine

mammals
- Reduce injury and mortality from entanglement in marine debris, particularly fishing gear. Efforts should include education outreach to fishing industry, abandoned gear recovery, and entanglement/stranding response teams
- Work to improve water quality by reducing entry of possible infectious agents, chemical pollutants (e.g., organochlorines, butyltins, heavy metal) and marine debris into reserve waters through resource management and education outreach programs

Proposed monitoring and research programs

A number of research programs are already in place, including long-term seabird and pinniped breeding studies (PRBO, UCSC, UCB), at-sea surveys of forage species, marine mammals and birds (NMFS, PRBO, UCSC), nearshore coastal monitoring of vertebrates, invertebrates and marine plants (PISCO-UCSC), watershed and estuarine studies of salmonids (NMFS). These well-studied sites also have counterparts outside MPA boundaries, to promote monitoring of MPA effectiveness. These include seabird and pinniped rookeries both north and south of the proposed MPA (PRBO, USFWS, NOAA/NMFS), studies of marine mammal and bird foraging concentrations at other upwelling plumes (PRBO), fish monitoring transects to the north, south and west of proposed boundaries (NMFS), PISCO intertidal and subtidal monitoring sites between Baja California and Alaska, watershed and estuarine studies of salmonids to the north (NMFS), and fishery data from recreational and commercial landings (CDFG).

Proposed education programs

Visitor centers and some docent programs already exist at Año Nuevo State Reserve, Big Basin State Park, and Long Marine Lab Seymour Center. A new, more comprehensive visitor center is planned at Año Nuevo State Reserve. These facilities could cooperatively provide education and outreach along with other federal, state and local agencies/organizations for the proposed MPA.

Enforcement

Existing infrastructure of several of the local state parks is already in place which could be utilized in cooperation with other federal, state and local agencies/organizations to provide enforcement support.

Socio-economic impacts

The proposed MPA is not adjacent to major ports (the closest ports being Half Moon Bay and Santa Cruz). Additionally, CPFV and recreational private fishing effort is much lower within the proposed MPA boundaries than in many other areas along the central coast.